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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/080,755	02/22/2002	Dustin Alan Cochran	8033077	8424

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EXAMINER

PARSONS, THOMAS H

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 01/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/080,755

Applicant(s)

COCHRAN, DUSTIN ALAN

Examiner

Thomas H Parsons

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6 and 10-16 is/are rejected.
- 7) ☒ Claim(s) 2,5,7-9 and 17-20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

Page 4, lines 19-22, lines 21 and 22 appear to be a duplicate of lines 19 and 20, suggest deleting either lines 19-20 or 21-22;

Page 8, line 18, suggest inserting "in" after "seen";

Page 9, line 6, "...to form a dynamic cushion an antifriction medium." appears awkwardly worded;

Page 10, lines 10-11, "When the position of the slide assembly 416 will reach equilibrium with regard to the cross-sectional flow area, hence controlling the machining gap." appears awkwardly worded.

Appropriate correction is required.

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the instant application is three paragraphs and 300 words in length.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: “140” as mentioned on page 7, line 25. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: “202” as shown on Figure 2. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Claims 9 and 13 are objected to because of the following informalities:

Claim 9, line 2, “...a high force forces...” appears awkwardly worded; and,

Claim 13, line 3, suggest replacing the comma with a period.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 3-4, and 6, 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williams (3,637,481), and further in view of MacLeod et al. (6,267,869).

Claim 1: Williams in Figures 1-4 discloses an apparatus for electrochemically etching a surface of a workpiece, comprising a frame (10) for holding the workpiece about an axis and facing a movable electrode (2) movable along the axis, the electrode (2) being axially movable, a source of electrolyte (8) to be pumped (P) at a fixed static pressure rate between the surface of the movable electrode (2) and the inner surface of the workpiece (6) cone, and a static fixture (4) for supporting the electrode (2) for movement toward and away from the inner surface of the workpiece (6) with minimal frictional restriction, and a force biasing the electrode surface toward the inner surface of the cone so that the gap through which the electrode flows between the inner surface of the cone and the surface of the electrode is determined primarily by the static flow rate of the electrolyte and the force bias of the electrode toward the inner surface of the cone (col. 3: 6 - col. 4: 58) (see also col. 4: 65 - col. 9: 22).

Williams does not disclose an electrode carrying a groove pattern to fix on an inner surface of a conical bearing to be utilized in a fluid dynamic bearing.

MacLeod et al. in Figure 7 discloses an electrode carrying a groove pattern to fix in an inner surface of a conical bearing to be utilized in a fluid dynamic bearing (abs.; and col. 4: 52-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted the electrode of Williams with the electrode of MacLeod et al because MacLeod on teach (col. 1: 51 - col. 2: 16) an electrode that would have provided complete sets of grooves to be formed on various surfaces quickly and efficiently thereby improving processing time, product quality, and throughput.

Claim 3: The rejection of claim 3 is as set forth above in claim 1 wherein further MacLeod et al. disclose a conical electrode comprising a groove pattern on an outer surface thereof, the grooves to be formed in the surface of the conical bearing being defined by the groove pattern (Figure 7 and col. 1: 51 - col. 2: 16).

Claim 4: The rejection of claim 4 is a set forth above in claim 1 wherein further Williams discloses that the bias of the dynamic element (19) and electrode (2) toward the conical surface is established by pressure against a distal end of the dynamic element (col. 3: 6 - col. 4: 57).

Claim 6: Williams discloses a source of electrical potential (32) to be applied to the workpiece (6) and electrode (2) respectively, the electrical potential creating a fixed current rate across the gap so that a rate at which an ECM process is carried out is determined primarily by the gap between the electrode surface and the inner surface of the cone (col. 3: 6 - col. 4: 57).

Claim 10: Williams in Figures 1-4 discloses apparatus for electrochemically etching a surface of a workpiece comprising means (10) for fixedly supporting the workpiece (6) in the apparatus; and means (14) for biasing an electrode (2) along an axis and across a gap from the

surface of the work piece, and means (P and 9) for supplying electrolyte (8) to the gap (col. 3: 6 - col. 4: 58) (see also col. 4: 65 - col. 9: 22).

Williams does not disclose an electrode carrying a groove pattern to fix on an inner surface of a conical bearing to be utilized in a fluid dynamic bearing.

MacLeod et al. in Figure 7 discloses an electrode carrying a groove pattern to fix in an inner surface of a conical bearing to be utilized in a fluid dynamic bearing (abs.; and col. 4: 52-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted the electrode of Williams with the electrode of MacLeod et al because MacLeod on teach (col. 1: 51 - col. 2: 16) an electrode that would have provided complete sets of grooves to be formed on various surfaces quickly and efficiently thereby improving processing time, product quality, and throughput.

Claim 11: The rejection is as set forth above in claim 10 wherein further Williams discloses that the means (P and 9) for supplying electrolyte (8) to the gap cooperate with the means (14) for biasing the electrode to thereby set the gap (col. 3: 6 - col. 4: 58).

Claim 12: The rejection is a set forth above in claim 11 wherein further Williams discloses that the means for fixedly supporting the workpiece (6) comprises a frame (10) for holding the workpiece about an axis and facing a movable electrode (2) movable along the axis, the electrode (2) being axially movable, and having a surface carrying a groove pattern to fix on an inner surface of the workpiece (col. 3: 6 - col. 4: 58).

Claim 13: The rejection is as set forth above in claim 11 wherein further Williams discloses that the means (P and 9) for applying electrolyte comprise a source of electrolyte (8) to

be pumped (P) at a fixed static pressure rate between the surface of the movable electrode (2) and the inner surface of the cone (6) (col. 3: 6 - col. 4: 58).

Claim 14: The rejection is as set forth above in claim 11 wherein further Williams discloses that the means (14) for biasing the electrode comprise a static fixture (4) for supporting the electrode (2) for movement toward and away from the inner surface of the cone (6) with minimal frictional restriction, and a pressure source (14) biasing the electrode surface toward the inner surface of the cone so that the gap through which the electrode flows between the inner surface of the cone and the surface of the electrode is determined primarily by the static flow of the electrolyte and the force bias of the electrode toward the inner surface of the cone (col. 3: 6 - col. 4: 58).

Claim 15: The rejection is as set forth above in claim 15 wherein further Williams discloses that the means (10) for fixedly supporting the workpiece comprises a static frame (18) for holding the workpiece about an axis and facing a movable electrode (2) movable along the axis, the electrode being axially movable and having a surface carrying a groove pattern to fix on an inner surface of the workpiece.

Claim 16: Williams in Figures 1-4 discloses a method for electrochemically etching a surface of a workpiece, comprising a frame (10) for holding the workpiece (6) about an axis and facing a movable electrode (2) movable along the axis, the electrode (2) being axially movable, pumping (P) electrolyte (8) at a fixed static pressure rate between the surface of the movable electrode (2) and the inner surface of the workpiece (6), and supporting the electrode (4) for movement toward and away from the inner surface of the workpiece (6) with minimal frictional restriction, and biasing (14) the electrode surface toward the inner surface of the

workpiece (6) so that the gap through which the electrode flows between the inner surface of the workpiece and the surface of the electrode is determined primarily by the static flow rate of the electrolyte and the force bias of the electrode toward the inner surface of the cone (col. 3: 6 - col. 4: 58) (see also col. 4: 65 - col. 9: 22).

Williams does not disclose an electrode carrying a groove pattern to fix on an inner surface of a conical bearing to be utilized in a fluid dynamic bearing.

MacLeod et al. in Figure 7 discloses an electrode carrying a groove pattern to fix in an inner surface of a conical bearing to be utilized in a fluid dynamic bearing (abs.; and col. 4: 52-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted the electrode of Williams with the electrode of MacLeod et al because MacLeod on teach (col. 1: 51 - col. 2: 16) an electrode that would have provided complete sets of grooves to be formed on various surfaces quickly and efficiently thereby improving processing time, product quality, and throughput.

Allowable Subject Matter

8. Claims 2, 5, 7-9 and 17-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas H Parsons whose telephone number is (703) 306-9072. The examiner can normally be reached on M-F (7:00-4:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (703) 308-2383. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Thomas H Parsons
Examiner
Art Unit 1745


Jill Warden
Supervisory Patent Examiner
Technology Center (703)